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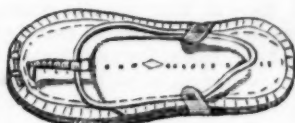
PRICE
ONE PENNY.



UNDER THE DIRECTION OF THE COMMITTEE OF GENERAL LITERATURE AND EDUCATION,
APPOINTED BY THE SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE.



1. Egyptian.



2. Egyptian.



3. Egyptian.



4. Roman Boot.



5. Grecian Sandal.



6.



7.



8.



9.



10. Chinese Lady's Foot.



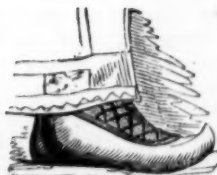
11. Chinese Lady's Shoe



12. Leg Bandage of Anglo-Saxons.



13. Anglo-Saxon Shoe.



14. Shoe of Anglo-Saxon Lady.



15. Long-toed Boot.



19. French Wooden Shoe.



18. Jack Boot.



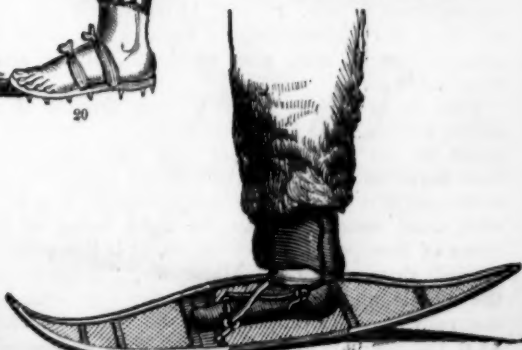
16. A Boot of the 17th Century.



20



17. A Gentleman's High-heeled Shoe.



21. Snow Shoe.

SHOES, AND THEIR VARIOUS FORMS.

THE invention of this useful article of dress must necessarily be attributed to a very remote period in the history of the world, for as soon as mankind had made even a moderate progress in the arts of life, their attention would naturally be directed to the contrivance of some method for preserving the soles of the feet from injury. In preparing a covering for the head, the most delicate materials, such as straw, shavings of wood, &c., were in the first instance resorted to, the only object being to protect the head from the heat of the sun, and occasionally from rain; but any substance calculated to guard the feet from injury, must be capable of enduring much wear and tear. On this account it is, that the earliest coverings for the feet, of which any traces exist, were formed of leather.

The first three engravings represent shoes, or rather sandals, (for the covering of the upper part of the foot is a much later invention,) of Egyptian manufacture, and show the high state of civilization in Egypt nearly three thousand years ago.

The sandals of the Greeks are the next we have to notice, and in these, the upper part of the foot is still left uncovered, although, perhaps, greater dexterity is exhibited in the different methods of fastening them on the feet. Much uncertainty, however, exists, as to the correct forms of the sandals of this celebrated nation, as most of the statues which have been preserved are greatly damaged, and the feet have been restored by modern artists: in addition to this, the greater number of the statues of their heroes, or gods, are represented with their bare feet. The form of the coverings for the feet of the ancient Romans is evidently derived from the Greeks, but they assumed a greater variety of shapes; in general, however, the upper part of the foot was either wholly or partially covered. The engraving No. 4, represents what may perhaps be most appropriately called a boot.

The four next engravings (Nos. 6, 7, 8, 9,) are representations of ancient shoes and sandals, of different kinds. The first, with spikes attached to the sole, is, evidently, intended for the purpose of rendering the wearer sure-footed, in ascending or descending steep acclivities, or in crossing plains of ice, or frozen snow. The next is almost a perfect shoe, but to what nation it belonged is uncertain. The third is a species of wooden clog, and is almost similar to those worn at the present day by the ladies of Syria. The fourth appears to be formed of leather; it is copied from an ancient fragment, but it is uncertain to what country it is to be attributed.

Referring to the shoes of modern nations, the first, and perhaps the most antique, are those worn by the Chinese. Like every other article of dress of this singular people, the shoes of the richer classes are chiefly formed of silk, and beautifully embroidered. Nos. 10 and 11 represent the foot and shoe of a Chinese lady of rank, which, from its extremely small size, was, no doubt, of the most fashionable form.

This strange desire of the Chinese females of all ranks, to reduce the size of their feet, is only another proof of the inconveniences and torments which have been endured for fashion's sake; and, although at first sight it appears extremely singular, it is not a whit more unnatural than the tight lacing of the ladies of Europe. To such an extent is this practice carried, that, says Lord Macartney, "Even among the middle and inferior classes, the feet were unnaturally small, or rather truncated. They appeared as if the fore-part of the foot had been accidentally

cut off, leaving the remainder of the usual size, and bandaged like the stump of an amputated limb; they undergo, indeed, much torment, and cripple themselves in a great measure, in imitation of ladies of higher rank, among whom it is the custom to stop, by pressure, the growth of the ancle, as well as the foot, from the earliest infancy; and leaving the great toe in its natural position, forcibly to bend the others, and retain them under the foot, till at length they adhere to it, as if buried in the sole, and can no more be separated. Notwithstanding the pliability of the human frame in tender years, its tendency to expansion at that period, must, whenever it is counteracted, occasion great pain to those who are so treated; and before the ambition of being admired takes possession of these victims of fashion, it requires the vigilance of their female parents to prevent their relieving themselves from the firm and tight compresses which bind their feet and ancles. When these compresses are constantly and carefully kept on, the feet are symmetrically small. The young creatures are, indeed, obliged for a considerable time, to be supported when they attempt to walk; but even afterwards they totter, and always walk upon their heels. Some of the very lowest classes of the Chinese, of a race confined chiefly to the mountains, and remote places, have not adopted this unnatural custom. But the females of this class are held by the rest in the utmost degree of contempt, and are employed only in the most menial domestic offices.

"So inveterate is the custom which gives pre-eminence to mutilated over perfect limbs, that the interpreter averred, and every subsequent information confirmed the assertion, that if of two sisters, otherwise every way equal, the one had been thus maimed, while nature had been suffered to make its usual progress in the other, the latter would be considered as in an abject state, unworthy of associating with the rest of the family, and doomed to perpetual obscurity, and the drudgery of servitude."

How this singular fashion arose, is uncertain; the common story in China is, that a certain lady of very high rank, happened to be gifted by nature with extremely small feet, and, no doubt, took good care that her advantage over the rest of her sex, should not be unknown; this naturally excited the emulation of others, and an endeavour was made to supply by art, that which was considered a deficiency on the part of nature.

This curious covering for the leg and foot (No. 12,) was in use among the Anglo-Saxons, it was employed chiefly by the higher classes, and by the clergy in general; a shoe was also worn along with it. These leg bandages, or garters, were at times very richly embroidered, and sometimes instead of being rolled one way, as in our engraving, they were employed and bound round contrary ways, so that when they were of two colours, the appearance resembled a Highland stocking; this was called cross-gartering.

The shoes of the Anglo-Saxons were very simple, but, at the same time, well contrived for comfort; they were usually tied at the instep by a leather thong.

After the time of the Anglo-Saxons, when the nation began to import its fashions from other countries, the form of the shoes and boots was constantly varying, indeed, they appear to have been made rather according to the whim or caprice of the wearer, than in consequence of any settled fashion; we must not, however, omit to notice the long-toed boot (No. 15,) so much worn in the reign of Richard the Second. It is said by historians that these were so inconvenient in walking, that the wearer was obliged to loop them up to the knee by means of metal chains;

it is also said that once on the field of battle, the young cavaliers were so encumbered by these unnaturally long toes, that they were obliged to cut them off in the heat of the conflict.

In the seventeenth century, the boots of gentlemen were ornamented with tops, sometimes elegantly fringed with lace, and the shoes also had immensely large rosettes of different-coloured silks.

We are coming now to comparatively modern times, and some now living can remember the high-heeled shoes worn by the ladies in the last century. No. 17 represents a shoe of this description, such as was worn by the fashionable men of the day.

The shoe and boot represented in Nos. 18, 19, are still worn in France: the jack-boot has been so often noticed by travellers and others, that it hardly needs description; it is, however, perhaps, not generally known, that the foot of the wearer of this unwieldy boot does not reach the sole, but is received in a space about four inches above the ground, so that the heel of the wearer is immediately in front of the spur. The wooden shoe is formed out of one solid piece of wood, and is worn in France chiefly by the children and women in country places. It is the wooden shoe alluded to by Goldsmith's porter in the *Citizen of the World*, who, while resting from his load, declares the French to be only "fit to carry burdens, because they are slaves and wear wooden shoes."

No. 20 is a kind of sandal worn by the mountaineers in Switzerland, studded with iron spikes, to prevent the foot slipping.

The snow-shoe is formed of a frame-work of wood, strongly interlaced with thongs of leather; it is employed by the Esquimaux and the Canadians, to prevent their sinking into the snow, when crossing their extensive plains. This shoe causes great pain to the wearer until after considerable practice in the use of it.

We cannot better conclude this account, than by noticing the machines invented by Mr. Brunel for the purpose of making shoes for the Army and Navy. The chief difference between his method and that in common use, consisted in the employment of nails of different lengths, for the purpose of uniting the various parts of the shoes, the only part subjected to the operation of sewing being the three pieces of which the upper-leather is composed, namely, the *vamp* and the two *quarters*. The cutting-out is performed by large steel punches of the proper form; the holes to receive the nails are made with the greatest regularity, and by a very simple contrivance: the nails, which are also made by the same machine, are dropped with unerring certainty in their places, and at one blow they are all driven in to the proper depth.

The nails employed are of three kinds. 1. The *long nails*, which form a complete row, as near as possible to the edge of the whole shoe, passing through the two soles, the welt, and the upper-leather; the heel is also fastened on by a row of these nails round its edge. The heads, or thick ends of the nails, are seen on the lower side of the soles, and keep the leather from wearing.

2. The *tacking nails*, which are of such a size as to pass only through the *sole* and the *welt*. Of these there is a row all round the edge of the foot, but further from the edge than the row of long nails.

3. The *short nails*, which only penetrate through the thickness of the lower sole; they are disposed in parallel rows across the tread of the foot, and also in a double row parallel to the outline of the toe, at about three quarters of an inch from the edge.

WITCHES.

MATTHEW HOPKINS, THE WITCH-FINDER.

AMONG the spots and blemishes which defaced "*Old England*,"—we mean England in the days even of good Queen Bess, King James, and our Charles's, none appear of a darker dye than the evils of superstition. And of all the forms under which the superstition of our ancestors is presented to our view, the notion respecting the existence and power of witches, is perhaps the most hideous and abominable. If the delusions of this kind had been so far harmless as to have kept within the minds of those persons whom they misled, we might, indeed, have wondered at such gross ignorance prevailing in the seats of learning, and amidst the bright periods of our literary history, like "the moping owl" in broad sun-shine; and we might have classed them among such *Vulgar Errors*, as those of "The philosophers' stone which should turn all to gold;" "The hidden virtue in precious stones," or, "The geese, which were produced from the fish called Barnacles!"

But the opinions respecting witches, were as cruel as they were false: and our feeling of the ridiculous, is quickly turned into that of sorrow and pity, on finding not only that some of the most learned, and, generally speaking, humane of our countrymen, in a past age, held the common notions upon witchcraft, but that *thousands* of poor, old, and innocent persons, mostly women, were condemned and executed for this alleged offence, in Great Britain alone! We say "*alleged offence*," when we consider the absurd stories told, and the many impostures which we know to have been contrived on the subject: at the same time, it may be well to remember the observation of Sir William Blackstone.—"It seems to be the most eligible way to conclude with an ingenious writer of our own (Addison,) that, in general, there has been such a thing as witchcraft, though one cannot give credit to any particular modern instance of it." Too many reported cases, indeed, there are, which, from the monstrous nature of the charge, the deep injustice of the kind of evidence, and the revolting barbarity attending the *last* resort against the accused, were a disgrace to our ancient criminal calendars. Dr. Grey, in his notes to the poem of *Hudibras* says, that he had seen an account of between three and four thousand persons, who suffered death for witchcraft in the king's dominions, from 1640 to 1660.

It should be a cause of thankfulness to us, that owing to the vast, though gradual, spread of sound knowledge since that time, and more especially in consequence of the mild and pure light which is shed into almost every cottage by the Gospel, now that the Bible may be read by all in their native tongue, we are freed from these shameful and degrading fetters; except, indeed, in some few instances in distant villages. But to show that the evil once reached even to the highest, both in rank and knowledge, we quote a passage from a sermon preached before Queen Elizabeth, in 1558, by Bishop Jewel, in which the mischiefs attributed to the agency of witches, and the effects of the "evil eye" are plainly declared. "It may please your grace to understand, that witches and sorcerers within these last four years are marvellously increased within this your grace's realm. Your grace's subjects pine away, even unto the death; their colour fadeeth, their flesh rotteth, their speech is benumbed, their senses are bereft. I pray God, they may never practise further than upon the *subject*." The climax of this, must surely have been extremely startling, and have

Moved the stout heart of England's queen,
Though Pope and Spaniard couldn't trouble it.

Bishop Hall speaks of a village in Lancashire, where the number of witches was larger than that of the houses. The learned Joseph Glanvil, on the occasion of an invisible drum, beating every night at the house of a Mr. Mompesson, in Wiltshire, turned his thoughts to the subject, and in 1666, published his "*Sadducism refuted, or Philosophical Considerations touching the being of Witches and Witchcraft*," though the story of his mysterious drummer, if the plot could have been traced, would, no doubt, have been found as foolish as one as that of the Cock-Lane ghost. Even the rich gold of Sir Thomas Browne's master-mind had the same species of alloy: "For my part," says he, "I have ever believed, and now do believe, that there are witches. They that doubt of these, do not only deny *them*, but spirits, and are obliquely, and upon consequence, a sort not of infidels, but atheists." To these instances, taken from the professions of Divinity and Medicine, we may add those of certain high legal persons, with imaginations equally warped. Lord Coke gravely draws a difference between a *conjurer*, a *witch*, and an *enchanter*. And the great and good Chief-Justice Hale, so late as the year 1664, in presiding as judge on the trial of two reputed witches, at Bury St. Edmund's, betrayed such a want of firmness in his mode of leaving the matter to the jury, that the poor women were found guilty upon thirteen several indictments, and executed, declaring their innocence to the last.

Follies of the same kind, however, are found recorded even in our parish registers, as will be proved by the following entry, which we extract literally from the register of burials of a city parish, St. Olave's, Hart Street, the residence, during the reigns of Elizabeth and some of her successors, of several noble and distinguished families. "1579. 16 MAYE. —Was buried Agnes Peirsonn, Sc'ant, to Mr. Paule Banninge*, aged 30 years; BEWITCHED." It was imperative on the parish officers, at that time, to note down the complaint of which the party had died; for a few months before the occurrence of Agnes Peirsonn's name, this is inserted as a fresh order. "November 1578. A new com'ndment from the Quene and her consill, to endite the names, the christian names, the age, and the disease of every person dying within the parish."

To these authorities, if so they may be called, must be added that of James the First; whose silly work, entitled *Demonologie*, reprinted in London in 1603, having first seen the light in Edinburgh, and coming, as it did, from a royal pen, found crowds of admirers, and made witchcraft fashionable. In his reign a new and severe statute was passed against witches, describing the crime in various particulars†, and enacting that offenders, duly and lawfully convicted, should suffer death. The old laws passed in England and Scotland against conjuration and witchcraft, which made the crime felony without benefit of clergy, were repealed by a statute 9 Geo. II. c. 5; doubtless to the great comfort and delight of many ancient and harmless females.

But we proceed to make some mention of the remarkable character whose portrait we have given. Matthew Hopkins of Manningtree, in Essex, in the evil days of Oliver Cromwell, was appointed Witch-

finder for the associated counties; and it is an accredited fact, that he discovered and brought to the stake or gallows, in one year, sixty poor creatures, from the county of Essex alone, as reputed witches. He is most likely the person alluded to by Butler in his *Hudibras*, as having been, by the Oliverian Parliament,

Fully empowered to treat about,
Finding revolted witches out.

The mode of detecting these unhappy beings was various, and Hopkins was celebrated for his discernment in such matters, being looked upon as a great critic in marks and signs. The old, the indigent, and the ignorant, such as could neither plead their own cause, nor hire an advocate, were the miserable victims of this knave's credulity, spleen, or avarice. One method to which he had recourse, was to weigh the supposed criminal against the Church Bible, which, if she was guilty, would weigh her down. Another was, to make her attempt to repeat the Lord's Prayer. It was thought that no witch could ever do this entirely, but would always omit one part or other. A witch could not weep more than three tears, and that only out of the left eye. This want of tears, was, by the Witch-finders, and even by some judges, deemed a substantial proof of guilt!

Swimming a witch was a kind of proof very generally practised. She was cross-bound, the right thumb to the left toe, and the left thumb to the right toe; and, thus prepared, thrown into a pond or river. If guilty, she could not sink, if innocent she was probably drowned. King James, who is said to have advised, if he did not invent this kind of ordeal, gave the following sapient reason for the effect produced; That "the culprit having by her compact with the devil, renounced the benefit of the waters of baptism, that element in its turn renounced her, and refused to receive her into its bosom." The burning alive of any animal, supposed to be bewitched by her, such as an ox, or a hog, would force the witch to confess. Incredible as it may appear in the present day, when so much is done to inform the mind and humanize the manners of all classes, an instance of this last superstition occurred recently. It is related in the *Morning Herald*, in the month of December, 1834, that a gentleman being alarmed by the horrible screams of some animal in extreme pain, upon going to the spot, discovered a monster in human shape, in the act of roasting, or burning alive, a young pig; declaring that he had reason to believe that the whole litter was bewitched, and that this was the only means of discovering who was the witch, and also of curing the rest. It is scarcely necessary to add, that the gentleman ordered the poor animal to be instantly killed, to the great annoyance of this dupe of a savage superstition.

Another mode of discovering witches, which was considered very efficient, as it most frequently extorted confession, was the following. The suspected person was placed in the middle of a room, upon a table or high stool, cross-legged, or in some other uneasy posture, to which, if she would not submit quietly, she was tightly bound with cords. Here she was watched, kept without food, and prevented from going to sleep for twenty-four hours, during which time, it was thought, her imps, or familiars, would come to her; till weakened in mind with terror, and exhausted in nature for want of necessary refreshment, the unfortunate creature was frequently frightened and driven into fancying herself possessed of supernatural powers; and by avowing crimes which existed only in her over-excited imagination, afforded further triumph to those ignorant or designing persons, who traded

* A very eminent and wealthy merchant, father of Paul, first Viscount Bayning of Sudbury, and ancestor of the present Lord Bayning.

† Such as calling up, or consulting, covenanting with, entertaining, feeding, employing, or rewarding any evil spirit; taking up dead bodies from the grave to be used in sorcery; attempting by magic arts to discover hidden treasure or restore stolen goods; or, by enchantment, to cause the hurt of any man or beast.

in the dying agonies of these victims. Witchfinders are said to have received about 20s. a head for all who were condemned.



MATTHEW HOPKINS.

There is in the Pepysian Library at Magdalene College, Cambridge, a very rare print of Matthew Hopkins, the most notorious of these informers. He is represented, as in the annexed cut; but engaged at his "dreadful trade," and surrounded by a variety of strange objects, the chief being a couple of witches. One of them named Holt, is saying, by means of a label, "*My impes are, 1. Ilemauzar; 2. Pye-wackett; 3. Pecke in the Crown; 4. Griezzel Gredigut.*" Four animals are in attendance, *Jarmara*, a black dog; *Sacke and Sugar*, a hare; *Newes*, a ferret; and *Vinegar Tom*, a bull-headed greyhound.

Hopkins at length met the same fate which he had prepared for so many others. Suspected of witchcraft, he himself underwent the experiment of swimming in his own way; and was, upon the event, (the tremendous alternative of appearing to float!) condemned and executed as a wizard.

SURELY a sense of our mortality,
A consciousness how soon we shall be gone,
Or if we linger—but a few short years—
How sure to look upon our brother's grave,
Should of itself incline to pity and love,
And prompt us rather to assist, relieve,
Than aggravate the evils each is heir to.—ROGERS'S *Italy*.

THE ATMOSPHERE.

I.

THERE is a class of fluids from which we derive so few of the sensations that come to us from other material substances, that we scarcely admit them to be matter. These are called AIRS, or AERIFORM FLUIDS, and the science which treats of them, is called PNEUMATICS. With the properties of one fluid of this class we are far more intimately concerned than with those of any other material substance; we are, in fact, perpetually immersed in that fluid; it enters most intimately into the composition of our bodies, we swallow a huge volume of it at every inspiration, and the very principle of life within us appears to feed upon it. One of its constituent elements is indeed so necessary to the sustenance of the power of living, that to cease to breathe, and to cease to live, have come to be used as synonymous expressions. This fluid is the ATMOSPHERE. It surrounds the globe of our earth on every side, forming a shell of vapour, which encloses the earth itself as its solid portion, or nucleus.

Only few of those sensations by which we are accustomed to recognise the existence of external things, appear to come to us from the air. We do not see it, as we do other material substances; we cannot touch it, as we do them; we are not conscious that it has weight, as they have; it does not appear to require any force to move it, as it does to move them; in short, there does not seem to be a single sense affected by it, although it enters largely into the constitution of every single sensation.

One great cause of the deception under which we thus labour, is that we are born into the air. Our senses are subjected continually to those affections which, if the mind took notice of them, would constitute perceptions of its existence from that period when it takes notice of nothing*. There are, however, other causes arising out of the conditions of the equilibrium of fluids, which enter largely into the explanation of this mystery.

The first of these is, that, by the nature of that equilibrium, when a solid body, of whatever form, is immersed in a heavy fluid, the pressure of that fluid, when at rest, produces in it no tendency whatever to move horizontally; there being, for each horizontal pressure on one side of it, an equal and opposite horizontal pressure on the opposite side, which two pressures neutralize one another. The vertical pressure of the fluid produces in the body a tendency to move upwards, equal only to the weight of the fluid it displaces. It follows that the air in which we are immersed does not, by reason of its pressure when at rest, tend to move us horizontally, in one direction more than another. It presses equally in all directions, and this is the case in every position into which we can throw our bodies.

The parts of the body are either hollow, as the chest; they are composed of solid parts, or bones; of fleshy or muscular parts; of nerves and tendons; or of vessels filled with fluid, as veins and arteries. The parts called hollow are not in reality so, but are filled with the same fluid, the air, in which the whole of the external portion of the body is immersed;

* It seems to be a law of our nature that the mind should not take notice of those affections of the organs of sense which are constantly repeated, and, therefore, *à fortiori*, of those which are continual. Examples of this are exceedingly numerous, and must present themselves to the mind of every one. Were it not for this habit of the mind, how many secrets of nature would be laid open to us. May it not, for instance, be possible that all the internal operations of the human body, each affecting some nerve or organ of sense, would, if the mind did but take notice of the affection, present itself to its eye, as completely as the parts of a piece of mechanism to the external organ.

and this air contained internally, has a direct communication, through the passage of the wind-pipe, with the external air; so that, in fact, the air contained internally, and the external air, form different portions of one continuous fluid. Thus the pressure of the air externally upon the ribs, is borne by an opposite pressure of the air within; and neither pressure is felt to have a tendency to alter the form of the cavity of the chest.

If, however, we exhale any portion of air from the chest, we become immediately conscious of a *diminution* of the internal pressure outwards, and an *excess* of the external pressure; the chest becomes oppressed, and, by a peculiar mechanism supplied by nature for that purpose, its dimensions contract, until the included air is again sufficient in quantity to supply the requisite pressure from within. It is for reasons of this kind that divers, when at a great depth, experience a severe pressure upon the ribs; the external pressure upon the chest being increased by the great weight of the water, and thus made to exceed the opposite internal pressure of the air.

Those portions of the body which do not communicate with the external air, and thus become filled with it, are all, whatever be their nature, completely saturated by fluids. Thus the bones are porous, and their pores are occupied by fluid secretions; the muscular portion of the body, or the flesh, is saturated by the blood; the nerves and sinews are tubes, each apparently serving as the conduit of a fluid.

It appears, then, that the mass of the human body may be considered as an accumulation of solid atoms, each separately immersed in a fluid, and it follows that the pressure upon any portion of the external surface of the body is propagated equally throughout its substance by means of the fluids, and that each solid particle thus sustains pressures equal in every possible direction; so that, by reason of these pressures, it can have no tendency to move either in one direction or another. As the pressures upon each particle thus separately neutralize one another, it follows that the particles do not press upon one another*. Thus then we see a reason why the external pressure of the atmosphere, which is exceedingly great, being altogether little short of 30,000 pounds on each individual, does not tend to press the parts of the body upon, or against, one another, and producing, therefore, no excitement of the nerves, is not felt.

Were the enormous pressure of the atmosphere any otherwise applied to our bodies than by the intervention of the fluid in which we breathe, it would be utterly impossible that the motions of the parts of the body, constituting life, should proceed; the slender and fragile mechanism, indeed, of its organs could not fail to be destroyed. By that admirable property, however, of the equal distribution of fluid pressure, not only are we enabled to sustain the 30,000 pounds' weight of atmospheric pressure without feeling it, but that pressure may be doubled by immersing the body thirty-six feet under water in a diving-bell, and yet no single nerve, not even the most delicate of the millions which overspread the body will, by reason of that pressure, experience the least perceptible excitement.

Such are the effects which result from the body's being immersed in a fluid, and from its parts being (according to an expression of Paley,) packed in fluids.

We now see plainly how the air may be (as it really is) a fluid possessing weight, and, therefore, pressing heavily upon us, and yet we be altogether uncon-

scious of the pressure. We may, however, very readily put the matter to the test of experiment. Let us destroy the equality of atmospheric pressure, by removing the air from any one portion of the body; we shall then at once be conscious of the existence of pressures upon the other portions, and of the great advantages we derive from an absolute and entire immersion in it. This removal of the air may be effected by various means; there is, however, a machine called the air-pump, which is commonly used and expressly intended for that purpose. By means of this machine, the air may be removed from any given portion of the body; its pressure upon the rest of it will then at once be perceived. If, for instance, the hand be applied so as to cover the open top of a vessel, of which the lower portion communicates with the air-pump, and if the pump be then put in action, so as to remove the air from the vessel, and, therefore, from the under-surface of the hand, the pressure of the air upon the upper surface will at once become apparent; the hand will be firmly pressed down upon the edges of the vessel, and, at length, it will be found impossible to move it; the blood-vessels will become distended, the back of the hand will be bent inwards, and the operation may be carried on until a pressure is produced equal to the weight of a column of thirty inches of mercury, a weight probably sufficient to rupture the mechanism of the hand.

The process of cupping is an example of this partial removal of pressure from the surface of the body. A small portion of spirits of wine is put into the cupping-glasses and lighted; by the heat thus produced, the air, which before occupied the glass, is in a great measure expelled, and its place supplied by vapour. In this state the glass is applied to the surface of the skin; the flame is extinguished, the vapour becomes condensed again into a liquid, the air loses its heat, and with its heat, its tendency to expand; thus its pressure upon the surface of the body (underneath the glass) becomes less than before, and less than the pressure upon other portions of the body; and the result of this unequal pressure is an immediate disorganization of the surface beneath the glass; the flesh and muscular parts swell out in a surprising manner, the vessels become distended, and blood is at length seen to gush from the pores of the skin.

Suction presents another striking example of the partial removal of pressure. There is a certain operation of the muscles, by which the air may be removed from the cavity of the mouth: if this exhaustion takes place when the lips are applied to any portion of the skin, the result will be a removal of the pressure from that portion of the surface of the body, and a consequent displacement of the skin beneath; moreover the exterior surface of the lips sustaining the atmospheric pressure, whilst the interior portion in contact with the skin is free from it, the two are brought closely in contact, and pressed together.

It is thus that snails attach themselves firmly to walls, or to the trunks or boughs of trees, and may be seen even to crawl with their bodies suspended beneath them. The under portion of their bodies is furnished with powerful muscles, which enable them to form a hollow space or cavity in any portion of its length. Their method of fixing themselves to any surface, is to raise their bodies into a hollow or cavity, producing a vacuum underneath this cavity, the edges of which are closely pressed upon the surface, and the whole body suspended to it by the external atmospheric pressure. Attaching in this manner,

* Of course it is here supposed that the external pressures spoken of do not alter the external form of the body.

different portions of their bodies successively to different parts of the surface on which they wish to move, they may be seen walking suspended not only as to their bodies, but the shell which serves them as a habitation, not only up perpendicular walls, but along the smooth surface of the ceiling of a room.

There is a plaything of children called a sucker, which acts precisely upon the principle we have been explaining. It consists of a circular piece of leather, which is exceedingly soft and pliable, and suspended by its centre from a string. If this be wetted, and applied to the surface of a stone, or any smooth heavy mass, and then an attempt be made to remove it by pulling the string, it will be found to oppose a powerful resistance.

The reason of this is obvious. The string being pulled, the leather is slightly raised in its centre, and the cavity beneath it is a vacuum; no air having been allowed to enter by reason of the close contact of the edges of the wet leather with the stone. The pressure of the air is thus removed from that portion of the stone which is beneath the leather, and its pressure upon the opposite side of the stone is unsustained; the stone is, therefore, by that unsustained force, pressed towards the leather, and, by the pressure of the atmosphere on its external surface, the leather is pressed against the stone.

It is precisely upon this principle that flies are enabled to fix themselves upon a perpendicular pane of glass, or upon the ceiling of a room. They are enabled to raise the central portions of their feet as the centre of the sucker is raised by the string, and a vacuum being thus formed underneath the foot, it becomes fixed upon the surface on which it is planted.

[Abridged from MOSELEY'S *Mechanics applied to the Arts.*]

THE RUINS OF COWDRAY HOUSE, MIDHURST, SUSSEX.

ABOUT a quarter of a mile eastward of Midhurst*, are the remains of Cowdray House, once the splendid seat of the family of Montague, but now only a venerable ruin. Reduced to its present state by the accident of fire, and not by the hand of time, it still presents a fair front, which, situated as it is a little off the high road from London to Chichester, might, at first sight, be imagined by the traveller, unacquainted with the place, to betoken an ancient and lordly, but still habitable mansion. It stands in a valley, near the banks of the river Arun, which runs between two well-wooded hills through Cowdray Park, a noble estate consisting of 800 acres, abounding in fine old trees, particularly Spanish chestnuts, of which there is a long and handsome avenue, called the Chestnut Race, near the neighbouring village of Easebourne.

There was anciently a manor-house at Cowdray, belonging to the Bohuns, who took the title of Baron from the town of Midhurst; but Cowdray seems to have afterwards become the property of the crown, as it was granted by Henry the Seventh to John Lord Montague; and, on the division of his property, passed to Lucy, his third daughter, whose second husband was Sir Anthony Brown, a person of ancient family, and Great Standard-Bearer of England. William Fitzwilliam, Earl of Southampton, the son of this lady by a former husband, may be considered as the founder of the structure, the remains

of which are represented in the engraving, he having received a royal patent early in the reign of Henry the Eighth, to add to the park, and build a castle of stone: and the visiter may now see the gothic letters, *W. S.* the initials of this nobleman, carved on the richly-wrought stone ceiling of the entrance-porch. On his dying without issue, the estate went to his half-brother, Sir Anthony Brown, whose son, the first Viscount Montague, greatly improved and enlarged the house.

This noble residence was twice honoured by a visit from royalty. King Edward the Sixth, in 1547, in a letter to his friend, Fitzpatrick, speaks of Cowdray as a "goodly house of Sir A. Brown's, where we were marvellously, yea, rather excessively banketted." And there is an old printed description of "The honorable entertainment given to the Queen's Majesty (Elizabeth,) in her progress at Cowdray, in Sussex, by the Right Hon. the Lord Montagu, in 1591." This was the son of the said Sir Anthony. After a flourishing account of the reception of her Majesty, in which she was addressed as "The Miracle of Time," "Nature's Glory," "Fortune's Empress," "The World's Wonder!" it states, by way of stepping from the sublime, that, on the following day, she was "most royally feasted; the proportion of breakfast was three oxen, and one hundred and fortie geese!" During the week of the Queen's stay at Cowdray, flattery and feasting were the order of the day; and she was pleased to hear the fulsome addresses of persons disguised as "pilgrimes, with their russet coats and scallop-shells," and "wild men, clad in ivie," and "anglers at goodlie fish-ponds," who, in their peculiar costumes, successively uttered strange and forced conceits upon her high birth, wisdom, and beauty, even comparing her to a goddess, who had condescended for once to light upon

This dusky spot, which men call earth.

On going through the arbour to take horse for Chichester, we are told her Majesty knighted six gentlemen, including my Lord's second son, Sir George Brown.

In Midhurst Church, on the south side near the chancel, is a large coloured and gilt monument, or rather pile of monuments, erected to the memory of certain members of this family. It is enclosed by iron rails, and consists of a marble altar-tomb, upon which are placed two full-sized recumbent figures of women in the rich cloaks and dress of the times, with ruffs round their necks, their heads resting on pillows; at the feet of one is an unicorn chained. But the chief figure of all, for there are many on the monument, is that of an old man with a beard, in rich armour and cloak, kneeling on a cushion before a square altar, round and below which are inscriptions, stating that here was buried Anthony Brown, Viscount Montacute, chief standard-bearer of England, K.G., with his two wives, Lady Jane Ratcliffe, daughter of Robert, Earl of Sussex, and Magdalen, daughter of William Lord Dacre. This Viscount died at Horsley, in Surrey, in 1592.

It may appear remarkable, that though a determined Papist, he should have received such marks of esteem and confidence from Elizabeth, as are implied by his appointment as her ambassador to Spain, and by her gracious visit at his family mansion; but he was a loyal and trust-worthy man, and this was his recommendation to his royal mistress.

In wandering over the park at this day, we cannot, indeed, imagine that we look upon the very trees under which sat the lion-hearted queen: for about the year 1770, the then viscount employed

* A small town between eleven and twelve miles north-east of Chichester, which probably received its name from being situated in the midst of woods, *hurst* being a Saxon word for a wood.

the famous Lancelot Brown, who, from a word he often used in advising improvements in lawns, gardens, &c., was called *Capability* Brown, and who removed some of the old oaks from Cowdray, placing formal clumps instead. Lately, however, a better style has prevailed, and among the "sunny spots of greenery" are to be found plenty of fine trees freely spread about the grounds.

Cowdray House was built in the form of a square, the chief front being towards the west, in the centre of which was the gate, flanked by two towers. The east side contained the chapel, hall, and dining-parlour, superbly fitted up, and decorated with paintings and statues: at the upper end of the hall was a buck standing, carved in brown wood, having on the shoulder a shield with the arms of England, and under it the arms of Brown, with many quarterings carved in wood. There were ten other bucks as large as life, standing, sitting, and lying, some with small banners of arms supported by their feet. This hall and staircase were pictured with the story of Tancred and Clorinda from Tasso. The parlour was adorned by Holbein, or some of his scholars. On the south of the quadrangle was a long gallery, in which were, coloured in stucco, the twelve apostles as large as life; and on the north side was another gallery, containing many whole-length family pictures,—also sacred and historical pieces, some of which were brought from Battle Abbey. The paintings on the walls were saved during the Civil War in the time of Charles the First, by a coat of plaster laid over the stucco: but one of the officers quartered here, exercising his weapon against the wall, broke out of one of the groups the head of Henry the Eighth, which was afterwards replaced.

This beautiful and massive structure was destroyed

by fire on the night of the 24th of September, 1793, charcoal having been left about by the workmen.

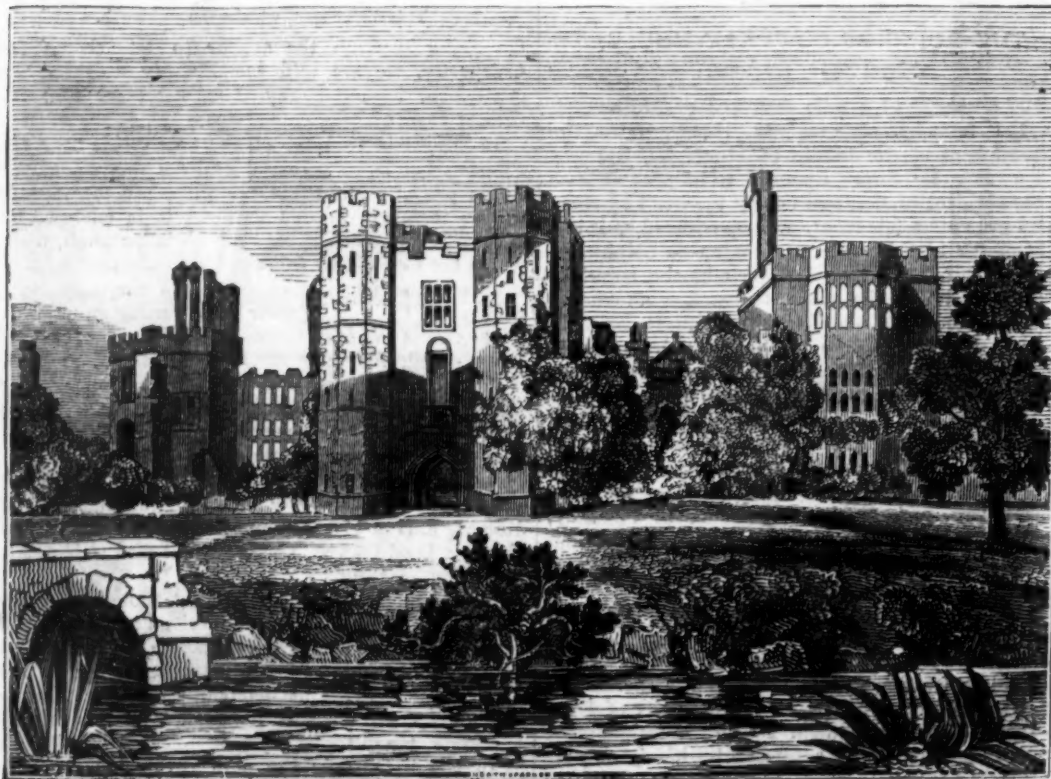
The ruins of the west side of this magnificent mansion contain the most perfect traces of the general architecture, and exhibit proofs of its amazing strength. Within the quadrangle, and about the premises, lie several fragments of curious sculpture; and the broken column,

Like the baseless fabric of a vision,

presents to the reflecting mind, a fit emblem, not only of human glory departed, but of the fate which, even at the time of this lamentable loss, yet impended over the family. For by a sad coincidence, exemplifying the saying that misfortunes often come together, a few short weeks after this stately pile was destroyed, the noble owner, the young Viscount Montague, during the life of his mother, and before the intelligence of the fire could reach him, was drowned, together with his fellow-traveller, Sedley Burdett, Esq., brother of the present Sir Francis Burdett, Bart., in rashly venturing to navigate the falls of the Rhine at Schaffhausen, in October, 1793*. His estates devolved by will to his only sister, married to W. S. Poyntz, Esq., the present Member of Parliament for Midhurst, who resides at Cowdray Lodge, a small but elegant house in the park, about a mile from the ruins.

The title went to the next heir male, Mark Anthony Brown, who was descended from the second son of the first Viscount Montague, and who died in 1797. The claim to the peerage then became dormant, if not extinct.

* For a mention of the fire, and of the still more disastrous catastrophe which followed it, see the *Annual Register* for 1793.



COWDRAY RUINS.